AZEOTROPE-LIKE COMPOSITIONS OF 1,1,1,3,3-PENTAFLUOROBUTANE AND HYDROGEN FLUORIDE

Cross-Reference to Related Application filed June 3, 2002, now U.S. Patent No 6,673,264 9/21/06

This application is a division of parent U.S. Application Serial No. 10/160,673 (pending) which was filed with the United States Patent and Trademark Office on June 3, 2002 and which, in turn, claims priority to provisional Application Serial No. 60/295,049, which was filed with the United States Patent and Trademark Office on June 1, 2001. The aforementioned parent and provisional applications are incorporated herein by reference.

Field Of The Invention

The present invention relates to azeotropic and azeotrope-like compositions of 1,1,1,3,3-pentafluorobutane (HFC-365) and hydrogen fluoride.

Background

Fluorocarbon based fluids have found widespread use in industry in a number of applications, including as refrigerants, aerosol propellants, blowing agents, heat transfer media, and gaseous dielectrics. Because of the suspected environmental problems associated with the use of some of these fluids, it is desirable to use fluids having low or even zero ozone depletion potential, such as hydrofluorocarbons ("HFC's"). Thus, the use of fluids that do not contain chlorofluorocarbons ("CFCs") or hydrochlorofluorocarbons ("HCFCs") is desirable. Additionally, the use of single component fluids or azeotropic mixtures, which do not fractionate on boiling and evaporation, is desirable. However, the identification of new, environmentally-safe, non-fractionating mixtures is complicated due to the fact that azeotrope formation is not readily predictable.

The industry is continually seeking new fluorocarbon based mixtures that offer alternatives to, and are considered environmentally safer substitutes for, CFC's and HCFCs. Of particular interest are combinations or mixtures containing 1,1,1,3,3-pentafluorobutane (HFC-365) and an acid, both having low ozone depletion potentials. (HFC-365 is well known in the art and is described in U.S. Patent Nos. 5,917,098; 5,395,997; 4,950,364; and 5,208,398,